

ACCESSION NR: AP4040518

S/0080/64/037/006/1183/1188

AUTHORS: Gorshkev, V.I.; Marty*nenko, L.I.; Chumakov, V.A.

TITLE: Separation of rare element mixtures by continuous ionic counterflow

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 6, 1964, 1183-1188

TOPIC TAGS: rare element ionic separation, continuous ionic counterflow, rare element separation, rare element mixture separation, ionic counterflow, EDTK salt

ABSTRACT: This work was prompted by the slowness, clumsiness and low yields of the conventional method of rare element separation in batches by saturating the upper column layer of resin with a solution of rare elements in form of chlorides, while the lower, "retaining" layer of the column is saturated with copper (II), iron (III) and hydrogen ions. Through these two layers a solution of (EDTK is not explained. It may be the Russian trade name of an ion exchange resin, but it also may be the abbreviation for an organic acid) EDTK salts is circulated (most frequently tri-substituted

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ammonium salt (NH_4HA). Instead of the above, the authors propose a continuous counterflow ion exchange method similar to that described by Spedding et al (J. Am. Chem. Soc 77, 1393 (1955)) but showing a number of advantages compared to it such as possibility of automation, simple controls, easy feed, and product separation. Two columns operating in counterflow are used. Ion exchange resin in its Cu or Cu and NH_4 form is fed into the upper part of column 1 where continuous frontal analysis of the mixture takes place. Yt, Gd and Sm form the more stable complexes with EDTK and therefore are accumulated in the upper part of column 1. The ion exchange resin in rare-earth-form leaving column 1 enters into column 2 against a counterflow of magnesium complexonate. Since rare element complexes with EDTK are more stable than the magnesium complexonate, the rare element ions are forced out of the resin. Pr concentrates in the lower part of column 1. The ion exchanger resin is directed to the lower part of column 2 for regeneration. This Mg-form flows from the lower part of column 2. This method permits visual control of separation since cation exchange resin KU-2 acquires different coloration in its various cation forms. The method is adaptable for big scale production. The mixture to be

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separated contained 68% Nd, 20% Pr, 7% Sm, 2% Gd and other elements of the yttrium group. The equivalent height of the theoretical plate was 3.1 cm. "The authors express their gratitude to the radiological laboratory of IONKh (Inst. of Org. and Inorg. Chemistry) UkrSSR." Orig. art. has: 3 figures and 1 table

ASSOCIATION: None

SUBMITTED: 09Jul62

SUB CODE: IC

NR REF SOV: 010

ENCL: 00

OTHER: 004

Card. 3/3

GORSHKOV, V.I., nauchnyy sotrudnik

Directed felling of large trees. Trudy VSNIPILesdrev no.10:15-22
164.

(MIRA 18:10)

AUTHORS: Gorshkov, V. I., Panchenkov, G. M.

20-114-3-34/60

TITLE: On the Mechanism of Ionic Exchange
(K voprosu o mekhanizme ionnogo obmena)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 3, pp. 575-578 (USSR)

ABSTRACT: The existing concepts of the mechanism of ionic exchange do not offer any sufficient ideas with respect to the influence of the conditions under which the reaction takes place, e.g. of the temperature or of the solvent, upon the equilibrium of ionic exchange. On the basis of results obtained during investigations of the equilibrium of ionic exchange, and also on the basis of phenomena described in the relevant scientific publications it may be possible to suggest the following concepts of the process of cationic exchange: A resin represents an acid with a high number of molecules. If immersed into a polar solvent, e.g. into water, this resin is ionized as result of the interaction with the molecules of the solvent. But as the resin anions are connected with each other, they cannot freely be distributed over the entire volume of the solvent. Because of the effects of the electrostatic forces,

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also the cations cannot propagate here. As the result, an "ionic cloud", is formed around the surface of the resin; this "ionic cloud" has a relatively high concentration of cations. In solutions of strong electrolytes, however, it is possible that at concentrations of more than 0,05 N there takes place an ionic association, an approaching of the contrary sign under the influence of electrostatic forces. This phenomenon must take place also for the cations and the anions of the resin. It is possible that on the outer surface of the resin there is formed a diffuse ionic layer with a sufficiently deep penetration of cations into the solvent. In the interior of the resin net, on the other hand, the thickness of the diffuse layer - because of the mutual repulsion between the opposed cations - is considerably thinner than the thickness of the outer diffusion layer. This thickness is the thinner, the closer to each other are the dissociating groups. Therefore it is possible, in a general case, to describe the equilibrium in first approximation as a process of two stages. If the resin is broken into very small pieces or if it represents a little polymerized product (the so-called soluble resins) then the concentration of ions on its surface will not be so high, and the equilibrium will be shifted quite considerably

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to the right. In this case, an "ionic cloud" is formed at the particle surface. The paper under review then proceeds to discuss the behavior of resin in weakly acid media, in alcohol solutions, and derives a formula that interprets a number of mathematical interrelations which had appeared in the course of the investigations of the equilibrium of ionic exchange. The same metal has different constants for different resins; this can be explained by the different structure of the carbon skeleton of different resins. With respect to sulphoresins and alkali elements in aqueous-alcoholic solutions (up to 60 % alcohol), a linear dependence of $\lg K$ on $1/D$ was obtained. The paper under review also discusses the influence of alcoholic additions on the constant of acid dissociation, and takes into account the behavior of the acids in solvents. There are 4 figures and 15 references, 9 of which are Slavic.

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On the Mechanism of Ionic Exchange

20-114-3-34/60

ASSOCIATION: Moscow State University imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

PRESENTED: November 22, 1956, by A. V. Topchiyev, Member of the Academy

SUBMITTED: November 22, 1956

Card 4/4

GORSHKOV, V.I., Cand Chem Sci--(diss) "Study of the ion exchange of
alkaline metals on sulfo-resins in various solvents." Mos, 1958. 9 pp
(Mos State Order of Lenin and Order of Labor Red Banner U im M.V. Lomonosov.
Chemical Faculty), (KL,26-58,106)

-20-

76-32-2-19/38
AUTHORS: Panchenkov, G. M. , Gorshkov, V. I. , Kuklanova, M. V.
TITLE: The Effect of the Addition of Organic Solvents on the Ion Exchange Equilibrium (Vliyaniye dobavok organicheskikh rastvoriteley na ravnovesiye ionnogo obmena) I. The Effect of Alcohols on the Equilibrium of Alkaline Ion Exchange on Sulfo-Resins (I. Vliyaniye spirtov na ravnovesiye obmena ionov shchelochnykh metallov na sul'fosmolakh)
PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 361-367 (USSR)
ABSTRACT: The authors mainly investigated the effect of methylalcohol on the equilibrium constant of alkaline ion exchange in the sulfo resins of inland origin CДВ-3, СБС and espatite-1. The kind of dependence of the equilibrium constant on the composition of the mixed solvent and its dielectric constant was checked. The effect of alcohol on various sulfo resins in the exchange process was compared for the purpose of explaining the part played by the carbon skeleton in resin. Finally the effect of alcohol on the exchange of various

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The Effect of the Addition of Organic Solvents on the Ion Exchange Equilibrium. I. The Effect of Alcohols on the Equilibrium of Alkaline Ion Exchange on Sulfo-Resins

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cations was compared and the part played by the salt-anion in the salts of one and the same metal was explained. - The ion exchange of the alkaline metals Li^+ , Na^+ , and K^+ with the H^+ ion was mainly investigated with chlorides. It is shown that the logarithm of the exchange constant in all investigated ions linearly depends on the quantity $1/D$ (up to the values of about 0,02) of the solvent. (D denotes the dielectric constant of the solvent). This shows that on these conditions the basic rôle is played by the change of the electrostatic interaction of ions and not by the change of solvation. It is further shown that an addition of alcohol increases the exchange constants of all three cations, that of LiCl changing least and that of KCl most. Within the range of the used concentrations of water-alcohol solutions (up to 60 % CH_3OH) a linear dependence of the logarithm of the exchange constant on $1/D$ was obtained. It is shown that with an increase of the concentration these exchange constants in alcohol become greater which can be used for improving the chromatographic separation of alkaline elements. It is shown that the exchange constants with the NaJ solution

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almost coincide with the corresponding exchange constants with the NaCl solution. This means that in the case of similar salts the nature of the anion has little effect on the magnitude of the exchange constant in water as well as on the change of the constant with alcohol addition. On the other hand, however, if a weakly dissociated ion was formed in consequence of the reaction, this influence is a great one. There are 5 figures, 7 tables, and 10 references, 8 of which are Soviet.

ASSOCIATION: Gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University, imeni M. V. Lomonosov)

SUBMITTED: November 3, 1956

Card 3/3

1. Ion exchange resins--Properties
2. Methanol--Exchange reactions
3. Organic solvents--Dielectric properties

20-119-3-39/65

AUTHORS: Shilov, A. Ye., Sabirova, R. D., Gorshkov, V. I.

TITLE: On the Problem of the Formation of a Carbonium ION in the Reactions of the Combination with Olefins (K voprosu ob obrazovanii iona karboniya v reaktsiyakh prisoyedineniya k olefinam)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 3, pp. 533 - 536 (USSR)

ABSTRACT: In the first section taking up one third of the work the authors report on previous papers, dealing with the same subject. This work investigates the absorption of ethylene in D_2SO_4 in the case of almost complete absence of an inverse decomposition of the methylsulfuric acid. For this purpose the reaction was performed at increased pressures (about 4 atmospheres) at room temperature. As reaction container served \square -shaped glass container; one of its knees contained the deuterio-sulfuric acid, in the other one the ethylene was frozen out. After this the absorption of ethylene in the sulfuric

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20-119-3-39/65

On the Problem of the Formation of a Carbonium Ion in the Reactions of the Combination with Olefins

acid began, when the container was shaken mechanically. The ethylsulfuric acid, which had formed, was hydrated with water to ethyl alcohol for the determination of its D-content, which then was transformed into ethyl chloride by a reaction with HCL in presence of zinc chloride. The ethyl chloride, which was obtained in this way, then was analyzed by the mass spectrograph MC- 1A. A table illustrates the intensity distribution of the lines in the calibration spectrum of the common ethyl chloride and in the mass spectra of the analyzed reaction products. The compositions of the formed products, which were computed from the data of this table, are composed in a second table. The only deuterium derivative, which is in the mixture in a quantity worth mentioning, is the monodeuteroethyl chloride. The production of small quantities of $C_2H_5D_2Cl$ in 2 reactions, given here, obviously is connected with the reversibility of the reaction

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On the Problem of the Formation of a Carbonium Ion in the Reactions of the Combination with Olefins



The light hydrogen because of the reaction does not pass into the acid. In the hydration of isobutylene in 4M and 6M-deutero-sulfuric acid the authors obtained similar results. The reaction took place at room temperature in an ampulla, which was sealed up by soldering. The trimethylcarbinole, which was obtained on this occasion, was after the washing out of hydroxyl hydrogen by light water directly analyzed by a mass spectrometer. The deuteriosulfuric acid was analyzed as to its content in deuterium before and after the reaction. Also in this case the reaction takes place without an important exchange of sulfuric acid and olefins and the reaction product is almost only monodeutero-alcohol. These results plainly speak for the following: In the combination of the sulfuric acid with ethylene and in the combination of water with isobutylene the state of the reversible production of a carbonium ion is

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On the Problem of the Formation of a Carbonium Ion in the Reactions of the Combination with Olefins

missing. By this obviously the hypothesis of the π -complex experimentally is proved. From the absence of an exchange follows that in these reactions not only the reversible isothermisation of the π -complex into a carbonium ion is missing, but also the isomerisation of the π -complex into an isomeric π -complex. The authors thank V. L. Tal'roze for his advices in the performance of the mass spectrometrical analyses. There are 2 tables and 11 references, 6 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, AS USSR)
PRESENTED: October 9, 1957, by N. N. Semenov, Member, Academy of Sciences, USSR
SUBMITTED: October 7, 1957
AVAILABLE: Library of Congress

Card 4/4

5(3),5(4)

SOV/62-59-9-32/40

AUTHORS:

Freydlin, L. Kh., Gorshkov, V. I., Lavrovskaya, T. K.

TITLE:

Selective Hydrogenation of Acetylene Bonds Conjugated to Ethylene Bonds on a Zinc Catalyst

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1679-1681 (USSR)

ABSTRACT:

In the present paper the catalytic properties of zinc in reactions of conjugated double bond systems are investigated. The following compounds are investigated: Isoprene, piperylene, vinyl- and isopropenylacetylene. The method of investigation and preparation of catalysts are described in reference 3. The course of the reaction was determined by means of the number of moles H_2 consumed. At normal pressure and temperatures between 60 and 140° isoprene could not be hydrogenated. Thus it is concluded that the hydrogenation reaction on zinc catalysts does not proceed beyond a system of conjugated double bonds. The reaction products were analyzed by means of gas-liquid chromatography. Chromatographs and analytical data are given in figures and in table 1. The zinc catalyst proved strictly selective. Vinylacetylene was hydrogenated only to divinyl, butane and butene were not formed.

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Selective Hydrogenation of Acetylene Bonds Conjugated to Ethylene Bonds on a Zinc Catalyst SOV/62-59-9-32/40

By a side reaction, polymers formed, owing to the rapid deactivation of the catalyst. A 75% yield was obtained under optimum conditions (80°, 93.9% H₂, 6.1% vinylacetylene). On a Zn-Cu catalyst vinylacetylene was hydrogenated down to butane. Results and experimental conditions for the hydrogenation of isopropenylacetylene are given in table 2. Isoprene was the final product. There are 1 figure, 2 tables, and 7 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: February 27, 1959

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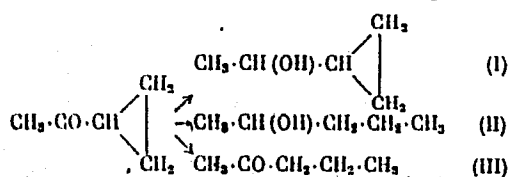
SOV/62-59-12-32/43

AUTHORS: Freydlin, L. Kh., Meshcheryakov, A. P., Gorshkov, V. I., and Glukhovtsev, V. G.

TITLE: Brief Communication. Selective Reduction of Methyl Cyclopropyl Ketone Over the Zinc Catalysts

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 12, pp 2237-2239 (USSR)

ABSTRACT: In catalytic reduction of methyl cyclopropyl ketone, two groups can be reduced: the carbonyl group and the trimethylene ring:



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The authors have found that Zn and Zn-Cu catalysts

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Methyl Cyclopropyl Ketone Over the Zinc
Catalysts

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(in the temperature interval 80-160° and 130 atm pressure) cause selective reduction of the carbonyl group, according to path (I) of the above equation, while Cu catalysts first cause (at 80°) hydrogenation of the trimethylene ring (path III). 2-Pentanol is formed above 125°. This behavior of methyl cyclopropyl ketone during catalytic reduction is similar to the reduction of α, β -unsaturated ketones (and aldehydes). There are 2 figures; 2 tables; and 10 references, 7 Soviet, 3 U.S. The U.S. references are: V. A. Slabey, P. H. Wise, J. Am. Chem. Soc., 71, 3252 (1949); R. V. Volkenburgh, K. W. Greenlee, J. M. Derfer, C. E. Boord, J. Am. Chem. Soc., 71, 3595 (1949); W. F. Bruce, G. Mueller, J. Seifter, J. L. Szabo, U. S. Pat. 2494084, Chem. Abstr., 45, 177 (1951).

ASSOCIATION:

N. D. Zelinskiy Institute of Organic Chemistry of
the Academy of Sciences, USSR (Institut organicheskoy

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Brief Communication. Selective Reduction of
Methyl Cyclopropyl Ketone Over the Zinc
Catalysts

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SOV/62-59-12-32/43

khimii imeni N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: May 4, 1959

Card 3/3

GORSHKOV, V. I.

5 (2), 5 (3)

AUTHORS:

Gorshkov, V. I., Kuznetsov, I. A.,
Panchenkov, G. M.

SOV/75-14-4-5/30

TITLE:

The Influence of Organic Solvents on the Chromatographic Separation of the Li^+ -, Na^+ -, and K^+ -ions on Sulfone Resins

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 417-421 (USSR)

ABSTRACT:

The authors worked out the optimum conditions of a chromatographic separation of sodium and potassium and a mixture of lithium, sodium, and potassium. They specially investigated the separation in solvent mixtures, i.e. in the concentration range of the organic solvent (60-80 %) in which the equilibrium constants of the exchange of the ions to be separated for hydrogen show the greatest differences. The investigations were carried out with the cationites espatite-1, KU-2, and SDV-3. The particles of the first two resins were 0.25-0.5 mm thick, and 0.10-0.25 mm in the case of SDV-3. Columns of various height 15 mm thick were used. The alkali elements to be separated were inserted in the form of chlorides, and eluted in the corresponding solvent mixture with a solution of hydrochloric acid. The quantitative determination of metal ions in the eluate was carried out by measuring the concentration change of the acid emanating from the column as well

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The Influence of Organic Solvents on the Chromatographic SOV/75-14-4-5/30
Separation of the Li^+ -, Na^+ -, and K^+ -ions on Sulfone Resins

as by the evaporation of the individual fractions titration of the chloride with silver nitrate against fluorescein as an indicator. Both methods gave the same results. In the cationites espatite and KU-2, the quantitative separation of sodium and potassium is possible in an aqueous medium. The separation of lithium and sodium failed, however, in the aqueous medium both in the case of espatite and SDV-3. The use of solvent mixtures as media improves considerably the separation of a mixture of lithium, sodium, and potassium on the sulfone resins under investigation. For practical applications, chromatographic separation on the resin SDV-3 proved to be best suitable. Complete separation is obtained if 80%-methanol is used as a solvent. Lithium is thereby eluted with a 0.12 N solution of hydrochloric acid in 80%-methanol, and sodium with a 0.25 N solution of hydrochloric acid in 80%-methanol. Potassium is finally eluted with a still more concentrated aqueous hydrochloric acid. The elution rate was 5.4 ml/min. The results of the separation on the various sulfone resins under different conditions are graphically shown by 6 figures. The investigations carried out are described in detail. There are 6 figures and 11 references, 5 of which are Soviet.

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The Influence of Organic Solvents on the Chromatographic SOV/75-14-4-5/30
Separation of the Li^+ -, Na^+ -, and K^+ -ions on Sulfone Resins

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 30, 1958

Card 3/3

Gorshkov, V.I.

23(5)

S/019/59/000/21/233/362
D037/D006

AUTHORS: Tsarev, A.V., Khokhlovskiy, N.V., Gorshkov, V.I.

TITLE: A Method of Determining the Elements of the Interior
Orientation of a Photogrammetric Chamber, and a
Device for This Purpose ²⁰

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 21, p 51 (USSR)

ABSTRACT: Class 42c, 10⁰¹. "r 123722 (622181/26 of 16 March
1959). 1) This method consists in photographing
the chambers on plates and then making linear mea-
surements of the plates on a stereocomparator. To
increase the work accuracy, the chamber is placed
in front of a collimator and a narrowly directed
band of light is photographed several times on the
same plate, the chamber being turned each time by
equal angles. 2) The base of the device, on which
the chamber is fixed, is made in the form of two
rotary discs with a device for locking them at

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S/019/59/000/21/233/362
D037/D006

A Method of Determining the Elements of the Interior Orientation
of a Photogrammetric Chamber, and a Device for This Purpose

equal angles of rotation and two mobile carriages
for centering the chamber, which is illuminated by
an illuminator with a control dash.



Card 2/2

GORSHKOV, V. I., Cand Chem Sci -- (diss) "Research into catalytic activity and selective action of metallic zinc in the hydrogenation reaction." Moscow, Academy of Sciences USSR Publishing House, 1960. 12 pp; (Academy of Sciences USSR, Inst of Organic Chemistry im N. D. Zelinskiy); 150 copies; free; (KL, 22-60, 131)

FREYDLIN, L.Kh.; GORSHKOV, V.I.

Selective action of a zinc catalyst in the hydrogenation of
mono- and diolefins. Kin. 1 kat. 1 no. 4:593-596 N-D '60.
(MIRA 13:12)

1. Institut organicheskoy khimii AN SSSR.
(Zinc) (Hydrogenation) (Olefins)

FREYDLIN, L.Kh., prof. (Moscow); GORSHKOV, V.I.

Catalytic reaction of the hydrogenation of zinc. Periodica polytechn
chem 4 no.2:119-124 '60. (EEAI 10:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo, Akademii nauk
SSSR, Moskva (for Freydlin)

(Catalysts)	(Hydrogenation)	(Zinc)	(Ethylene)
(Ketones)	(Isoprene)	(Styrene)	

80005

S/020/60/131/05/035/069
B011/B117

5.1190
AUTHORS:

Freydlin, L. Kh., Gorshkov, V. I.

TITLE: Catalysis of Hydrogenation Reactions by Zinc

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, PP 1109-1112 (USSR)

TEXT: It was established by the authors that the catalytic effect of Zn is a specific one. In hydrogenation and reduction reactions, the hydrogenation of olefines is not catalyzed by zinc. The hydrogenation of the ethylenic bond activated by a phenyl group or a conjugated double bond is accelerated by zinc at elevated temperatures or pressures only. Zn catalyzes the selective hydrogenation of the acetylenic bond down to an ethylenic bond. The reduction of the C=O group of aldehydes and ketones is accelerated to a considerable degree. The results are in accordance with values calculated for the energy barriers of these reactions on zinc. Thus, the different order of hydrogenation of bonds on zinc as compared to the one on other metal catalysts can be explained by the formation mechanism of an intermediate complex. At present, it is more and more clearly recognized that the heterogeneous catalytic reaction passes through an adsorption stage. If both components of the reaction are activated during hydrogenation, they form a surface intermediate complex with the catalyst. In this case, the ease of hydrogenation of different intermediate atomic bonds depends on the

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Catalysis of Hydrogenation Reactions by Zinc

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B011/B117

height of the energy barrier ($-E$) of the reaction (Ref 1). In the first place, the reaction will actually take place which has the least height of the energy barrier for formation (or decomposition) of the intermediate complex. The E values can be also calculated from the averages of the bond energies (Q). The $C\equiv C$ and $C-C$ bonds are hydrogenated more easily on Ni than the $C=O$ bonds. These reactions proceed in an order analogous to the one established on almost all known catalysts. As has been stated above, the situation is quite different with Zn. On Zn, the $C=C$ bond is not hydrogenated as a rule, the $C=O$ group can be hydrogenated to give $CH-OH$, whereas the acetylenic bond is selectively hydrogenated down to the ethylenic bond. The authors explain the formation of the intermediate complex on hydrogenation of the ethylenic bond by means of a scheme, and calculate its heat of formation E' which is -57.9 kcal/mole (I). The heats of formation for the hydrogenation of the acetylenic bond down to the ethylenic bond ($E'_2 = -48.6$ kcal/mole (II)) and the heat of formation for the complex which forms when the $C=O$ group is reduced ($E'_3 = -47.4$ kcal/mole (III)) are calculated in an analogous way. It is obvious that for all three reactions $E' < 0$, and $E'' > 0$ ($E'' =$ heat of decomposition). Thus, the rate of these processes has to be limited by an adsorption stage (Ref 1). From the calculations performed by the

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Catalysis of Hydrogenation Reactions by Zinc

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authors, it follows that the energy barriers of the reactions discussed are substantially higher on Zn than on Ni. It can be predicted from the activation energies that all three reactions must necessarily proceed more difficultly on Zn than on other metal catalysts of hydrogenation. The hydrogenation of the ethylenic bond will be the most difficult one, the hydrogenation of the C=O bond the easiest one. The authors suppose that the ratio between the concentration of active hydrogen and the compound to be hydrogenated will be lower on Zn than on Ni. Table 1 shows the conditions under which the hydrogenation of three types of bonds mentioned begins. There are 1 table and 8 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

PRESENTED: October 2, 1959, by A. A. Balandin, Academician

SUBMITTED: October 1, 1959

Card 3/3

GORSHKOV, V.I.; SHABANOV, A.A.; PANCHENKO, G.M.

Electrochromatographic separation on a cation exchanger. Zhur.
fiz. khim. 34 no. 11:2530-2533 N '60. (MIRA 14:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Base-exchanging compounds) (Chromatographic analysis)
(Electrophoresis)

FREYDLIN, L.Kh.; GORSHKOV, V.I.

Reduction of cyclohexanone on a skeletal zinc catalyst under pressure.
Izv. AN SSSR. Otd. khim. nauk no.2:366 F '61. (MIRA 14:2)

1. Institut organicheskoy khimii im.N.D.Zelinskogo AN SSSR.
(Cyclohexanone)

53400

25045
S/062/61/000/006/007/010
B118/B220

AUTHORS: Freydlin, L. Kh., Polkovnikov, B. D., and Gorshkov, V. I.
TITLE: Catalytic hydrogenation of dimethyl vinyl ethynyl carbinol
PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 6, 1961, 1120-1127

TEXT: The synthesis of dienes by selective catalytic hydrogenation of the obtainable vinyl acetylene hydrocarbons and alcohols concentrated, up to the present time, primarily on the hydrogenation of dimethyl vinyl ethynyl carbinol. Following their study (Ref. 7: Izv. AN SSSR, Otd. khim. n., 1944, 71) the authors made an attempt to synthesize the diene alcohol by selective hydrogenation, using a nickel skeleton catalyst poisoned by pyridine and a zinc skeleton catalyst behaving selectively on hydrogenation of enin hydrocarbons to enins. The hydrogenation of dimethyl vinyl ethynyl carbinol with addition of 1 to 3 moles of hydrogen was effected in methanol solution in the autoclave. The excess hydrogen was eliminated. The catalyst was washed with methyl alcohol. The methanol solution was added to the catalyzate; then, fractionation was effected

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Catalytic hydrogenation of dimethyl vinyl...

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S/062/61/000/006/007/010
B118/B220

after separation of the methanol. Since quantitative methods of determination for dimethyl vinyl ethynyl carbinol and its hydrogenation products had not been developed so far, the content of carbinol in the fractions was determined according to the amount of vinyl acetylene which forms due to the effect of metallic sodium. In the presence of the nickel skeleton catalyst, the addition of one mole of hydrogen to dimethyl vinyl ethynyl carbinol does not proceed selectively: A mixture forms, which contains the initial carbinol as well as the diene and ethylene alcohol. The partial poisoning of the catalyst surface by pyridine did not result in a considerable increase of the yield in diene alcohol. In the presence of the zinc skeleton catalyst, dimethyl vinyl ethynyl carbinol is hydrogenated selectively to form dimethyl butenyl carbinol. After addition of one mole of hydrogen, the catalyzate contains about 70 % of diene alcohol. Thus, the zinc catalyst develops the highest selective activity in this reaction. B. V. Lopatin and the woman-student I. Mikhel'son are thanked for taking the spectra and for their assistance. T. N. Nazarov, L. B. Fisher, and Kh. V. Bal'yan are mentioned. There are 4 figures, 2 tables, and 11 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: E. B. Bates, E. R. H. Jones,

Card 2/3

25045

S/062/61/000/006/007/010

B118/B220

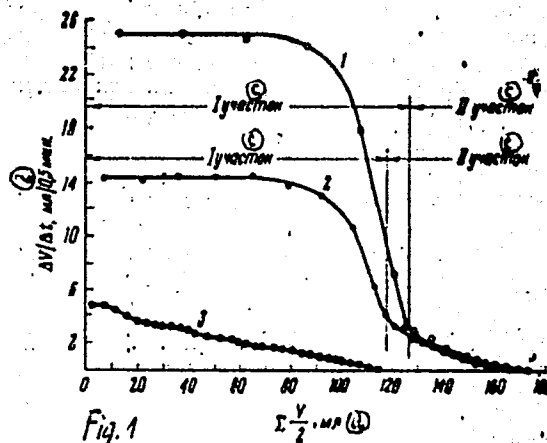
Catalytic hydrogenation of dimethyl vinyl...

M. C. Whitung, J. Chem. Soc. 1954, 1954.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy USSR)

SUBMITTED: July 11, 1960

Fig. 1: Hydrogenation of dimethyl vinyl ethynyl carbinol (curves 1-2) and dimethyl butenyl carbinol (curve 3) on the nickel skeleton catalyst at 250C.
Legend: 1) 0.2574 g in 10 ml CH_3OH ; 2) 0.2402 g in 10 ml $\text{C}_2\text{H}_5\text{OH}$; 3) 0.7134 g in 10 ml $\text{C}_2\text{H}_5\text{OH}$; a) ml; b) ml/0.5 min; c) section.



Card 3/3

PANCHENKOV, G.M.; GORSHKOV, V.I.

Swelling of cation-exchange resins in mixed solvents. Vysokom.
soed, 3 no.2:177-183 F '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova.
(Base exchanging compounds)
(Resins, Synthetic)

GORSHKOV, V.I.; KIZNETSOV, I.A.; PANCHENKOV, G.M.

Continuous countercurrent ion-exchange method of separation.
Dokl. AN SSSR 143 no.3:643-645 Mr '62. (MIRA 15:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom V.I.Spitsynym.
(Ion exchange)

GORSHKOV, V.I.; PANCHENKOV, G.M.; IVANOVA, T.V.

Kinetics of alkali metal ion exchange on the sulfonated KU-2
cation exchanger in water and in 60% methyl alcohol. Zhur.fiz.
khim. 36 no.8:1690-1694 Ag '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova,
kafedra fizicheskoy khimii.
(Metal ions) (Ion exchange resins)

SHABANOV, A.A.; GORSHKOV, V.I.; PANCHENKOV, G.M.

Electrochromatographic separation on a cation exchanger.

Part 2: Rates of motion of the zones. Zhur.fiz.khim. 36
no.8:1695-1697 Ag '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova kafedra
fizicheskoy khimii.

(Chromatographic analysis) (Electrophoresis) (Ion exchange)

GORSHKOV, V.I.; KUZNETSOV, I.A.; PANCHENKOV, G.M.

Maintenance of parallel transport conditions in a moving bed
of ion exchanger. Zhur. fiz. khim. 36 no.3:611-613 Mr '62.
(MIRA 17:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

SHABANOV, A.A.; GORSHKOV, V.I.; PANCHENKOV, G.M.

Electric conductivity of the sulfonate-cation exchanger SDV-3 in
water-alcohol and water-acetone solutions. Zhur.fiz.khim. 36
no.10:2148-2152 O '62. (MIRA 17:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

PANCHENKOV, G.M.; GORSHKOV, V.I.; SLOVETSKIY, V.I.

Comparative kinetic characteristics of the KU-1, SDV-3, SM-12, and SBS
cation exchangers. *Kin.i.kat.* 4 no.1:82-87 Ja-F '63. (MIRA 1643)

1. Moskovskiy gosudarstvennyy universitet imeni M.N.Lomonosova,
khimicheskiy fakul'tet.

(Ion exchange)

KUZNETSOV, I.A.; KUSTOVA, L.V.; GORSHKOV, V.I.; PANGHENKOV, G.M.

Equilibrium of cation exchange of alkali metals on cation
exchange resins KU-1 and KU-2. Vest.Mosk.un.Ser.2:Khim. 18
no.2:10-13 Mr-Apr '63. (MIRA 16:5)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Alkali metals) (Ion exchange resins)
(Chromatographic analysis)

TOLMACHEV, A.M.; GORSHKOV, V.I.; PANCHENKOV, G.M.

Exchange dynamics of ions of different valencies. Zhur.fiz.khim. 37 no.7:
1635-1636 J1 '63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet.

GORSHKOV, V. I.; KUZNETSOV, I. A.; PANCHENKOV, G. M.;

"Eine kontinuierliche Gegenstrom-Ionenaustauschmethode zur Trennung von Ionen mit annähernd übereinstimmenden Eigenschaften"

Third Working Conference on Stable Isotopes, 28 October to 2 November 1963, Leipzig.

SHABANOV, A.A.; ZAIKIN, A.N.; GORSHKOV, V.I.

Zone indication in ion exchange chromatography from the change
in conductance of the cation exchanger layer. Zhur. fiz. khim.
37 no.6:1415-1417 Je '63. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Chromatographic analysis)
(Ion exchange)

GORSHKOV, V.I.; KUZNETSOV, I.A.; PANCHENKOV, G.M.; KUSTOVA, L.V.

Continuous countercurrent ion exchange method for separation of lithium and sodium. Zhur. neorg. khim. 8 no.12:2790-2794 D '63.

Feasibility of countercurrent ion exchange separation of rubidium and cesium. Ibid.:2795-2799 (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra fizicheskoy khimii.

GORSHKOV, V.I.; PANCHENKOV, G.M.; SAVENKOVA, N.P.; SAVOST'YANOVA, S.U.

Continuous countercurrent ion exchange method for separation of rubidium and cesium on the cation exchanger KU-1. Zhur. neorg. khim. 8 no.12:2800-2805 D '63. (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra fizicheskoy khimii.

GORSHKOV, V.I.; VORONTSOVA, O.N.; PANCHENKOV, G.M.; ASPANDIYAROVA, S.S.

Equilibrium of alkaline earth metal ion exchange on the cation
exchanger KU-1 in hydrogen-form. Vest. Mosk. un. Ser. 2: Khim.
19 no.5:47-52 S-O '64. (MIRA 17:11)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

GORSHKOV, V.I.; MARTYSENKO, L.I.; CHUMAKOV, V.A.

Separation of mixtures of rare-earth elements by a continuous
countercurrent ion-exchange method. Zhur. prikl. khim. 37 no.6:
1183-1188 Je '64. (MIRA 18:3)

GORSHKOV, V.I.; PANCHENKOV, G.M.; CHUMAKOV, V.A.

Continuous countercurrent ion-exchange method of separating
potassium and rubidium. Zhur. fiz. khim. 38 no.5:1358-1361
My '64. (MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
Submitted July 24, 1963.

424-12311

3-11-61 12-12-61 2489/2491

1. I. I. Yuznetsov, I. I. Pavlov

Separation of lithium isotopes by a cation exchange method

Khim. Zh. 1961, 34, 1, 1-4

Separation of lithium isotopes by a cation exchange method

The two main research results of the present work are the separation of the isotopes of lithium by a cation exchange method. The exchange solvent, anion of salt, and the concentration of the salt in a single separation might be increased. The results of the work are described in which a single partition element might be used in a multi-stage process. The authors describe a study in pursuit of the separation of the isotopes of lithium by a cation exchange method. The possibility of separation of the isotopes of lithium by a cation exchange method was demonstrated. The coefficients of a single separation of lithium or the cation exchange resin were determined. From aqueous solutions, $\alpha = 1.0010$ at a stage of 50%.

100-443273

The α value = 1.0014. It was found that at a series of the cation
 "anion" for exchange from 0.4-0.5 N solutions the height of
 the theoretical plate is 6-9mm.
 1 figure, 1 graph and 1 table.

Московский государственный университет им. М. В. Ломоносова,
Факкультет Московского государственного университета, факультет № 10

17

to the ion exchange resin

"APPROVED FOR RELEASE: 08/25/2000

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TAL'ROZE, V.L.; TANTSYREV, G.D.; GORSHKOV, V.I.

Chromatographic mass spectrometry. Part 2: Problems arising during the contact of chromatographic columns with the mass spectrometric detector. Zhur. anal. khim. 20 no.1:103-111 '65. (MIRA 18:3)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.

SAFONOV, M.S.; GORSHKOV, V.I.

Ion exchange dynamics in the filtration of a solution containing
two cations through cation exchanges in a composite form.

Zhur. fiz. khim. 39 no.5:1251-1253 My '65. (MIRA 16:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomnecova.

SAFONOV, M.S.; GORSHKOV, V.I.

Particular features of the dynamics of ion exchange on highly swelling ion exchangers. Zhur. fiz. khim. 39 no.11:2714-2719
N '65. (MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

L 13907-66 ENT(m)/EPF(n)-2/ENP(b)/ENP(t) LJP(c) JD/JG

ACC NR: AP6002817

SOURCE CODE: UR/0078/66/011/001/0222/0223

AUTHORS: Gorshkov, V. I.; Volokhov, Yu. A.

ORG: Moscow State University, im. M. V. Lomonosov, Department of Physical Chemistry
(Moskovskiy gosudarstvennyy universitet, Kafedra fizicheskoy khimii)

TITLE: Distribution of a mixture of cesium and rubidium chlorides in the system
of water phenol

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 1, 1966, 222-223

TOPIC TAGS: phenol, water, rubidium compound, cesium compound, phase equilibrium,
solvent extraction

ABSTRACT: To extend the literature data on the ion-exchange and the distribution chromatography of a phenol-containing solvent system as presented by C. Gualandi, I. Mazzei, and G. Burana (Ann. Chim., 49, 1941, 1959), the distribution coefficients of mixtures of CsCl and RbCl in the system of water-phenol were determined. The measurements were made at 20C. The salt concentrations in the water and phenol layer were determined by flame-photometry, and the magnitude of the distribution

coefficient K_{Rb}^{Cs}

$$K_{Rb}^{Cs} = \left(\frac{c_{Cs}}{c_{Rb}} \right)_{phenol} / \left(\frac{c_{Cs}}{c_{Rb}} \right)_{water}$$

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UDC: 546.35/.36:131

L 13907-66

ACC NR: AP6002817

was determined as a function of the initial salt ratio and total salt concentration. The experimental results are tabulated. It was found that K_{Rb}^{Cs} increased with increase in the total salt concentration and that cesium chloride tends to concentrate in the phenol layer. It is concluded that the system of water-phenol is a satisfactory solvent extraction system for the separation of cesium chloride from rubidium chloride and it is pointed out that the difference in density between the water and phenol layers is sufficiently large to permit the successful extraction of cesium without the aid of an auxiliary agent. Orig. art. has: 1 table and 1 equation.

SUB CODE: 07/ SUBM DATE: 01Jul65/ ORIG REF: 004/ OTH REF: 010

TS
Card 2/2

L 34371-66 EWT(m) DS/RM

ATC NR: AP6010713

SOURCE CODE: UR/0189/66/000/001/0016/0020

AUTHOR: Gorshkov, V. I.; Korolev, Yu. Z.

ORG: Physical Chemistry Department, Moscow State University (Kafedra fizicheskoy khimii, Moskovskiy gosudarstvennyy universitet)

TITLE: Selectivity of sulfonated and sulfophenolated cation exchange resins for alkali metal ions

SOURCE: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 1, 1966, 16-20

TOPIC TAGS: alkali metal, ion exchange resin, chemical separation

ABSTRACT: The aim of the study was a direct determination of the separation factors K of various pairs of alkali metal cations on certain sulfonated (Dowex-50) and sulfophenolated (KU-1, Amberlite IR-100 and Wofatit P) cation exchange resins, the elucidation of the dependence of K_{Cs} and K_{Rb} on the concentration and composition of the solution, and the determination of these factors under conditions where the influence of the phenol groups is varied. KU-1 was found to be the most selective of the sulfophenolated resins. In dilute solutions (up to 0.1 N), K is practically independent of the concentration of the equilibrium solutions, and above 0.1 N decreases with increasing concentration. The dependence of K on the composition (relative proportions of the two cations of the pair) is slight. The presence of phenol groups in the structure of the resin has no effect on the selectivity for lithium and sodium

Card 1/2

UDC: 541.13

L 34371-66

ACC NR: AP6010713

ions, but does affect the selectivity for potassium and rubidium and particularly rubidium and cesium ions. If the ion exchange is carried out in alkaline media, the separation factors of cesium and rubidium increase somewhat, but those of other ions remain unchanged. It is concluded that the high selectivity of sulfophenolated cation exchange resins for Rb^+ and particularly Cs^+ ions is due to the presence of the phenol groups, which apparently are capable of a specific nonexchange interaction with cesium ions and to a lesser degree with rubidium ions, and are incapable of such interaction with lithium and sodium ions. Orig. art. has: 1 figure and 3 tables.

SUB CODE: 07/ SUM DATE: 17May65/ ORIG REF: 005/ OTH REF: 007

Card

2/2

90

S/019/61/000/015/048/101
A154/A126

AUTHORS: Khokhlovskiy, N.V.; Tsarev, A.V.; Gorshkov, V.I.; Sheremet, A.P.;
Samoylo, N.N. ✓

TITLE: An illumination device for airphoto stereoscopic instruments

PERIODICAL: Byulleten' izobreteniy, no. 15, 1961, 42 - 43

TEXT: Class 42o, 1004. No. 140224 (649776/26 of January 7, 1960). An illumination device for airphoto stereoscopic instruments, stereocomparators for example, distinguished by the fact that, in order to reduce its dimensions, to obtain more uniform illumination over the entire field of the photograph, as well as to reduce heating of the film, the device is made in the form of a transparent plane-parallel plate serving both as a photo holder and an illuminator, the non-effective edges and one of the bases of which are coated with white opaque paint, while one or more luminescent illuminating lamps are placed near the effective transparent side edges.

Card 1/1

S/019/61/COO/015/061/101
A154/A126

AUTHORS: Chertov, G.K.; Khokhlovskiy, N.V.; Tsarev, A.V.; Gorshkov, V.I.

TITLE: A device for illuminating the floating marks in photogrammetric instruments

PERIODICAL: Byulleten' izobreteniy, no. 15, 1961, 46

TEXT: Class 42h, 2303. No. 140245 (682698/26 of October 19, 1960). A device for illuminating the floating marks in photogrammetric instruments, distinguished by the fact that, in order to increase its effective angle so as to illuminate a large number of floating marks, the projecting unit of the device is made in the form of a flat reflecting mirror, inclined at an angle of 45° to the optical axis, and in the center of which there is an elliptical aperture which is projected in the form of a circle on the focal plane of the photogrammetric camera.

Card 1/1

USSR

ACCESSION NR: AP4007470

S/0286/63/000/024/0051/0052

AUTHOR: Khokhlovakiy, N. V.; Dubovik, V. A.; Tsarev, A. V.;
Gorshkov, V. I.; Sheremet, A. P.

TITLE: Method for the photogrammetric mapping of waves from a ship
and an instrument for processing photographs obtained by this
method. Class 42, No. 159277

SOURCE: Byul. izobret. i tovarn. znakov, no. 24, 1963, 51-52

TOPIC TAGS: photogrammetry, shipboard mapping, photogrammetric
mapping, photograph processing, photogrammetric instrument, gyro
control, photogrammetric control, photogrammetric plotter, photo-
grammetric drawing, survey control, wave pattern, wave mapping

ABSTRACT: During normal mapping in this method, with horizontal
disposition of the optical axes of the cameras, photographs are ob-
tained and their further processing simplified through simultaneous
opening of the shutters, which is accomplished by closing the con-
tacts of an electrical circuit by means of a pitch gyro at the mom-
ent of zero heel angle. A special device was created to process

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ACCESSION NR: AP4007470

photographs obtained in this manner. On its bed plate are mounted a binocular optical system and transverse and longitudinal carriages, to the latter of which is fastened a crossover indicator which picks up movements of the transverse carriage through a rod. This design accelerates readings of coordinate increments for subsequent calculation of wave height and length and increases measuring accuracy. The device can be modified to accommodate a pantograph for direct measurement of vertical profiles (i.e., in planes parallel to the photographic base). The pantograph, which is securely fastened to the longitudinal carriage, picks up movements from the transverse carriage. (See Enclosure 01.)

SUBMITTED: 27Dec62

DATE ACQ: 20Jan64

ENCL: 01

SUB CODE: PG, AS

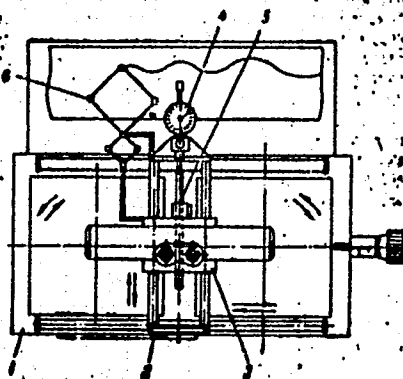
NO REF SOV: 000

OTHER: 000

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ACCESSION NR: APL007470

ENCLOSURE: 01



1 -- bed plate; 2 -- longitudinal carriage; 3 -- transverse carriage; 4 -- crossover indicator; 5 -- rod; 6 -- pantograph

Card 3/3

L 29964-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6000434

SOURCE CODE: UR/0137/65/000/009/G017/G017

AUTHOR: Gorshkov, V. I.; Kuznetsov, I. A.; Panchenkov, G. M.;
Savenkova, N. P.

69
B

TITLE: Continuous counterflow ion-exchange method of separating cesium and rubidium ~1

SOURCE: Ref. zh. Metallurgiya, Abs. 9G154

REF SOURCE: Sb. Ionoobmen. tekhnologiya. M., Nauka, 1965, 49-54

TOPIC TAGS: rubidium, cesium, chemical separation, ion exchange

ABSTRACT: The separation was carried out in a counterflow apparatus consisting of 2 columns 160 cm high and 25 mm in diameter. The Rb-ions were not retained by the cationite as well as were the Cs-ions, therefore, the Rb-ions accumulated in the upper part of the first column, and the Cs-ions in the lower part of the second column. KU-1 sulfo-cation was the ion-exchanger in this case. A hydrogen-type of cationite was selected and as a displacer — a 0.2 or 0.1/N solutions of BaCl₂ (in some of the experiments Cs salts were also used). The rate of Rb-ion accumulation in the upper part of the ion zone to be separated

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UDC 669.885/.886.09

L 29964-66

ACC NR: AR6000434

0
depended upon Rb concentration in the initial mixture. In the second column a zone of pure Cs was quickly obtained. Its impurity was $< 0.001\%$. The output of this apparatus for purification of Cs-salts, containing 0.5 to 20% impurities, changes very little and was characterized by a 1.8 - 2.2 phlegm number. When CsCl is used as a displacer, there is no limitation of concentrations, however, a phase of Cs regeneration takes place. The Rb^+ separation from Cs mixtures, containing no other alkali metal ions, is easier in as much as the frontal separation in the H-form on the cation exchange resin does not cause difficulty. V. Semakin.

SUB CODE: 11, 20, 07 / SUBM DATE: none

Card 2/2 CC

GORSHKOV, Vasilii Iosifovich; METIT, G.Ya., red.; SUKHAREVA, R.A.,
tekhn.red.

[Regulating wages and establishing work norms; practice of the
Moscow Grinding Machine Plant] Uporiadochenie zarabotnoi
platy i normirovaniia truda; opyt Moskovskogo zavoda shlifo-
val'nykh stankov. Moskva, Ob-vo po rasprostraneniu politi-
cheskikh i nauchnykh znani RSFSR, 1957. 31 p. (Peredovoi
opyt proizvodstva. Seriya "Ekonomika," vyp.2.) (MIRA 12:9)
(Moscow--Grinding machines) (Wages)

GORSHKOV, V. K.

AUTHOR: Gorshkov, V. K.

120-2-15/37

TITLE: Integral Mass-spectrographic Method of Determining the Concentration of Elements. (Integral'nyy Mass-spektrograficheskiy Metod Opredeleniya Kontsentratsiy Elementov.)

PERIODICAL: Priory i Tekhnika Eksperimenta, 1957, No.2, pp. 53 - 56 (USSR).

ABSTRACT: The author describes a method of determining the element concentrations in solids using a two wire ion source with surface ionisation (Ref. 2). In order to achieve a high efficiency ion source, the atoms and molecules in the latter are ionised at a temperature of about 2,600°K. The evaporation takes place at one of the wires and ionisation at the other. The source may be calibrated and since its working conditions do not change during one experimental period the conditions for ionisation stay constant. It is theoretically possible to compare during one experiment several ion currents, corresponding to masses of various elements. This is possible because the evaporation of all elements in the analyser does not take place at the same rate. The concentration is determined by comparing the integrated mass spectrogram of elements

Card 1/3 of the unknown sample with the integrated spectrogram

Integral Mass-spectrographic Method of Determining the Concentration
of Elements. 120-2-15/37

of a master sample. The relative ionisation coefficients of Ba, La, Ce, Pr, Nd, Sm and Eu, have been experimentally determined and it is stated in conclusion that the apparatus is simple and the ionisation is efficient. Atomic ions of only one sign are present in the mass spectrogram, the difference between coefficients of ionisation of various materials is small, and it is stressed that there exists a linear dependence between the ion current and the amount of the used material. When ionisation coefficients of particular materials are known it becomes possible to determine the relative masses in any mixture of them in the presence of other elements. Concentrations of mono-isotopic elements such as Na, Al, Pm, Pr and Tb can be easily measured. A diagram of the two-wire ion source, a mass spectrogram photograph of a mixture of La, Ce, Pr and Sm, and a table of the relative ionisation coefficients for the ionising wire temperature 2,600°K are given. The experiment was supervised by G. M. Kikavadze; N. P. Kostrov helped in the preparation of the ion source. M. P. Anikina supervised the mechanical side of the experiment. There are 3 references, 2 of which are Slavic.

Card 2/3

Integral Mass-spectrographic method of Determining the Concentration
of Elements. 120-2-15/37

SUBMITTED: December, 3, 1956.

AVAILABLE: Library of Congress.

Card 3/3

AUTHORS: Gorshkov, V.K., Ivanov, R.N., Kukavadze, G.M., 89-7-2/32
 Reformatskiy, I.A.

TITLE: The Yield of Fission Products of U^{235} Within the Domain of Rare
 Earths (Vykhod produktov deleniya U^{235} v redkozemel'noy oblasti)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 7, pp. 11-14 (USSR)

ABSTRACT: The present paper describes the measuring of these yields by means
 of the integral mass-spectrographic method, with the help of which
 the relative share (in %) of several elements contained in the
 sample can be determined simultaneously during the experiment.
 This method permits the mass-spectroscopical measuring of the yields
 on La^{139} , Pr^{141} , Pm^{147} and Pm^{149} . Working out this method and
 measuring took place on a mass spectrograph with a resolving capaci-
 ty of 1 : 800. First, the production of the samples is discussed.
 The uranium preparation enriched somewhat with U^{235} was here irra-
 diated with thermal neutrons in a reactor. The final results of
 these mass-spectrographic measurements are shown in a table and are
 compared with some data given in publications.
Lanthanum, praeceodymium, promethium, samarium: The increased yield
 of La^{139} can hardly be explained by means of the hitherto existing

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The Yield of Fission Products of U^{235} Within the
Domain of Rare Earths

89-7-2/32

theoretical investigations concerning the course of the curve of the yields. The peak "composed" from Pm^{147} and Sm^{147} was separated on the basis of the difference between the sublimation temperatures of samarium and promethium. According to various details given concerning the above mentioned elements the authors compute the cross section of the absorption of neutrons for Pm^{147} and find:

$$\sigma_{147} = 90 \pm 20 \text{ barn. } \sigma_{Sm}^{147} = 1000 \pm \text{barn.}$$

Neodym: The yields of: Nd^{143} and Nd^{144} given here are somewhat lower than those given in publications. Cerium: Two isotopes are contained mainly in the sample investigated here, namely Ce^{140} and Ce^{142} with the ratio of the masses $M_{140}/M_{142} = 1,082 \pm 0,029$. The lack of noticeable amounts of Ce^{144} is explained by their decay in Nd^{144} . Samarium: For the lower limit of the absorption cross section of Sm^{149} for thermal neutrons the value $58\,000 \pm 9\,000$ barn is found. The following composition of isotopes for samarium was found by the authors (in %):

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The Yield of Fission Products of U^{235} Within the
Domain of Rare Earths

89-7-2/32

Sm^{146} : 40 ± 3 ; Sm^{148} : 15 ± 2 ; Sm^{150} : 38 ± 3 ; Sm^{152} : 7 ± 2 .
There are 1 figure, 3 tables, and 6 references, 3 of which are
Slavic.

SUBMITTED: January 12, 1957

AVAILABLE: Library of Congress

Card 3/3

1. Uranium isotopes (Radioactive)-Fission
2. Rare earths-Mass spectra
3. Lanthanum isotopes (Radioactive)-Determination
4. Praeseodymium isotopes (Radioactive)-Determination
5. Promethium isotopes (Radioactive)-Determination
6. Samarium isotopes (Radioactive)-Determination
7. Neodym isotopes (Radioactive)-Determination

GORSHKOV, V. K.

AUTHORS: Ivanov, R. N., Gorshkov, V. K., Anikina, M. P., 89-12-11/29
Kukavadze, G. M., Ershler, B. V.

TITLE: Fission Yields of Several Heavy Fission Products of U^{233}
(Vykhody nekotorykh tyazhelykh oskolkov pri delenii U^{233})

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 546-547 (USSR)

ABSTRACT: The absolute fission yields were determined by means of the
isotope dilution method (1) and of the mass spectrographically
obtained integral concentrations (2). The sample of U^{233} was
irradiated for two months in a reactor.
The following yields in % were measured:

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Fission Yields of Several Heavy Fission Products of U^{235}

89-12-11/29

Absolute Yield according to

Isotope	Method 1	Method 2
Cs ¹³³	5,2 ± 0,3	5,50 ± 0,13
Cs ¹³⁷	5,8 ± 0,3	6,16 ± 0,14
Ce ¹⁴⁰	5,45 ± 0,50	6,16 ± 0,24
Ce ¹⁴²	5,5 ± 0,5	6,06 ± 0,24
Nd ¹⁴³	5,0 ± 0,3	5,19 ± 0,17
Nd ¹⁴⁴	3,8 ± 0,4	3,84 ± 0,15
Nd ¹⁴⁵	2,82 ± 0,25	2,88 ± 0,08
Nd ¹⁴⁶	2,20 ± 0,15	2,24 ± 0,07
Nd ¹⁴⁸	1,03 ± 0,10	1,07 ± 0,04
Nd ¹⁵⁰	0,51 ± 0,08	0,49 ± 0,02
Sm ¹⁴⁹	0,66 ± 0,13	0,70 ± 0,03
Sm ¹⁵¹⁺¹⁵²	0,60 ± 0,14	-- --
Sm ¹⁵¹	-- --	0,54 ± 0,03

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Fission Yields of Several Heavy Fission Products of U^{233}

89-12-11/29

The Xe^{135} absorption coefficient was obtermind at

$(3,2 \pm 1,0) \cdot 10^6 b.$

(There are 1 table, 1 figure and 8 references, 5 of which are Slavic).

SUBMITTED: May 20, 1957

AVAILABLE: Library of Congress

Card 3/3

GORSHKOV, V. K.

MURIN, A. N., ERSHLER, B. V., KUKAWADZE, G. M., ANIKHINA, M. P., GORSHKOV,
V. K., IVANOV, R. N., KRIZANSKIY, L. M. and REFORMATSKIY, I. A.

"Mass-Spectrometric Study of U^{233} , U^{235} and Pu^{239} Fission Products."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic
Energy, Geneva, 1 - 13 Sep 58.

AUTHOR: Gorshkov, V.K. 89 -1-8/18

TITLE: The Mass-Spectrographic Determination of the Yield of La-139, Pr-141, Pm-147, Sm-151, Sm-152, Eu-153 in the Fission of U-233 and the Absorption Cross Sections of Pm-147 and Sm-151 (Mass-spektrograficheskoye opredeleniye vykhodov La-139, Pr-141, Pm-147, Sm-151, Sm-152, Eu-153 pri delenii U-233 i secheniy pogloshcheniya Pm-147 i Sm-151).

PERIODICAL: Physics and Thermotechniques of Reactors (Fizika i teplotekhnika reaktorov), Supplement Nr 1 to Atomnaya energiya, 1958, (USSR)

ABSTRACT: 1.) The following absolute yields were measured in %:

La-139	5.91 ± 0.23	Pm-147	1.53 ± 0.06
Ce-140	6.16 ± 0.24	Nd-148	1.07 ± 0.04
Pr-141	5.57 ± 0.19	Sm-149	0.70 ± 0.03
Ce-142	6.07 ± 0.24	Nd-150	0.49 ± 0.02
Nd-143	5.19 ± 0.17	Sm-151	0.33 ± 0.03
Nd-144	3.84 ± 0.15	Sm-152	0.21 ± 0.02
Nd-145	2.88 ± 0.08	Eu-153	0.13 ± 0.02
Nd-146	2.24 ± 0.07		

Card 1/2

The Mass-Spectrographic Determination of the Yield of
La-139, Pr-141, Pm-147, Sm-151, Sm-152, Eu-153 in the
Fission of U-233 and the Absorption Cross Sections of
Pm-147 and Sm-151

89 -1-8/18

2.) The following absorption cross sections were determined:

$$\text{Pm-147} \quad \sigma_a = 90 \pm 20 \text{ b}$$

$$\text{Sm-151} \quad \sigma_a = 8000 \pm 1500 \text{ b}$$

There are 3 figures, 3 tables, and 11 references, 5 of which
are Slavic.

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Card 2/2

1. Uranium isotopes (Radioactive)-Fission
2. Promethium-Absorptive properties
3. Samarium-Absorptive properties
4. Spectrographic analysis-Applications
5. Neutron cross sections-Determination

SOV/89-7-2-7/24

21(8)

AUTHORS:

Gorshkov, V. K., Anikina, M. P.

TITLE:

Fine Structure in the Fission Yield Curve for U^{233} (Tonkaya struktura krivoy vykhoda oskolkov deleniya U^{233})

PERIODICAL:

Atomnaya energiya, 1959, Vol 7, Nr 2, pp 144 - 147 (USSR)

ABSTRACT:

The yields of Ba^{138} , Sr^{88} , Sr^{90} , Y^{89} , Zr^{90} , Zr^{91} , Zr^{92} , Zr^{93} , Zr^{94} , Zr^{96} , Cs^{136} and Rb^{86} were determined with U^{233} irradiated 5.1 years ago. These yields are listed in tables and are in good accordance with the values obtained in other measurements. The relative yields of Y^{89} , Sr^{88} and Sr^{90} were measured by mass spectrometry. The specimens were surface-ionized by means of an ion source consisting of two wires. The initial U^{233} solution was not fractionated. The lack of Sr^{80} permits the statement that the yield of $Rb^{86} \leq 0.8\%$ is the absolute yield of Sr^{88} . To determine the yield of Zr isotopes the Zr had to be completely isolated, because the concentration of the specimen was otherwise too low. The isolation was achieved by double-precipitation with iodide, and thorium was

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Fine Structure in the Fission Yield Curve for U^{233}

SOV/89-7-2-7/24

used as a carrier. The Zr isotope yield was measured relatively to the Sr^{90} yield. The Ba^{138} yield was determined by comparison to the Pr^{141} yield. The Cs^{136} yield was directly calculated due to the presence of Ba^{136} . The yield curve of U^{233} shows both in the light and heavy fragments a fine structure of the same arrangement. These two fine structures cannot be explained by the assumption that neutrons are captured by fission fragment nuclei after the fission because the capture cross section is too small. On the other hand it is impossible that the fine structure is caused by delayed neutrons emitted by fission particles because in this case the fine structures would not be in accordance. Therefore the only possible assumption is that the cause of the fine structures is the mechanism of the fission of U^{233} cores. V. G. Zhuravleva measured a great number of photographic plates with the microphotometer. There are 1 figure, 3 tables, and 11 references, 4 of which are Soviet.

SUBMITTED: December 19, 1958
Card 2/2

GORSHKOV V. K., Cand Phys-Math Sci -- (diss) "Absolute yields of the fission products of U^{235} by the action of thermal neutrons and the fine structure of the curve of the yields." Moscow, 1960. 11 pp; (Inst of Theoretical and Experimental Physics Academy of Sciences USSR); 100 copies; price not given; (KL, 17-60, 138)

LEVSHIN, L.V.; GORSHKOV, V.K.

Nature of the bonding forces of associated molecules of dyes
in concentrated solutions. Opt. i spektr. 10 no.6:759-766
Je '61. (MIRA 14:8)

(Dyes and dyeing) (Molecular dynamics)

ACC NR: AP6017952 (A) SOURCE CODE: UR/0413/66/000/010/0015/0015

AUTHOR: Gorshkov, V. N.; Platov, V. P.; Kuz'min, A. D.; Mukonin, V. F.

ORG: None

TITLE: A method for rolling pipes on a planetary mill. Class 7, No. 181593 [announced by the All-Union Scientific Research Institute for Design and Planning of Metallurgical Machine Building]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 15

TOPIC TAGS: pipe, rolling mill, metal rolling

ABSTRACT: This Author's Certificate introduces: 1. A method for rolling pipes on a planetary mill. Pipes of large diameter are rolled by deformation of the pipe during the rolling process along the surface of rollers of a length and diameter considerably less than those of the pipe to be rolled and independent of the pipe diameter. 2. A modification of this method in which pipes with a given number of fins on the outer surface are produced by using rollers with a worm thread which are kinematically connected to the mechanism for rotating the pipe.

SUB CODE: 13/ SUBM DATE: 23Apr64

UDC: 621.771.064;621.774.3-417.2

Card 1/1

KOVALEVSKIY, M.M., inzh.; REVZIN, B.S., inzh.; GORSHKOV, V.N., inzh.; BABICH,
V.A., inzh.

The GT-6-750 TMZ gas turbine system. Energomashinostroenie 11 no.7:
8-12 J1 '65. (MIRA 18:7)

L 24355-66 EAT(d)/ENT(m)/ENP(f)/EPF(n)-2/I-2/ETC(m)-6 WW

ACC NR: AP6012273

SOURCE CODE: UR/0114/65/000/011/0040/0044

AUTHOR: Kovalevskiy, M. M. (Engineer); Revzin, B. S. (Engineer); Kurosh, V. D. (Engineer); Gorshkov, V. N. (Engineer); Yakhnis, V. A. (Engineer)

ORG: none

TITLE: Experimental bench tests for developments of the GT-6-750 gas turbine installation at the Ural Turbine Plant

SOURCE: Energomashinostroyeniye, no. 11, 1965, 40-44

TOPIC TAGS: gas turbine, gas turbine engine test

ABSTRACT: The authors describe the basic stages in bench-testing a pilot model for the GT-6-750 gas turbine installation at the Ural Gas Turbine Plant. This 6000 kw unit was designed as a power drive for gas line compressor stations. The design of the installation is described in issue No. 7 of this same publication. Bench-testing and finishing operations, which included making new turbine blades, required 15 months. Participating in the tests were the Central Boiler and Turbine Institute im. I. I. Polzunov, the Institute of Technical Thermophysics AN UkrSSR and other organizations. The characteristics of the axial compressor and the high- and low-pressure turbines are given together with a description of tests on the installation as a whole. A diagram is given showing the temperature field of the turbine under nominal operating

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UDC: 621.438.001.5

L 24855-66

ACC NR: AP6012273

conditions. The results of tests to determine the dynamic stresses in the working blade are discussed. The system used for sealing the internal bearing is described and its advantages and disadvantages are noted. The methods used for testing the vibration level and other physical and mechanical parameters are discussed and resultant data are given. These data were used for perfecting the design of the machine as well as for updating the drawings for mass production, and are now being used for designing new gas turbine installations. Orig. art. has: 4 figures.

SUB CODE: 21/ ³³ SUBM DATE: 00/ ORIG REF: 003/ OTH REF: 000

Card 2/2 *dda*

(A) L 11058-66 EPA/ENP(f)/T-2/ETC(m) NW
ACC NR: AP6002956 SOURCE CODE: UR/0286/65/000/024/0126/0126

INVENTOR: Kovalevskiy, M. M.; Gorshkov, V. N.; Zatkovetskiy, G. N.; Kumkov, P. A.;
Shul'man, V. L.; Bantikov, Yu. S.; Svyatskiy, Z. M.

ORG: none

TITLE: Mixer and exhaust duct for a gas-turbine combustion chamber. Class 46,
No. 177231

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 126

TOPIC TAGS: gas turbine engine, gas turbine, combustion chamber, turbine cooling

ABSTRACT: The proposed mixing chamber and exhaust duct is equipped with an external screen forming an annular clearance for feeding cooling air (see Fig. 1). The air then enters the mixing chamber through openings in its walls. To ensure a more uniform cooling of all combustion chamber components, the clearance is divided by a

Card 1/2 UDC: 621.438.056—712.8

GORSHKOV, V.S.

DECEASED
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1962/5

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CHEMICAL TECHNOLOGY